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ABSTRACT

The United States Training and Employment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict job performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimental sample. The GATB norms described are appropriate only for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample is included. (AG)

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TECHNICAL REPORT

ON

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

TELLER (banking) ~~1-06.02~~ 212.368

S-259

~~B-536~~

(Supersedes B-495)

TM 001 100 027

U. S. Employment Service in
Cooperation with the
Arizona and Michigan State Employment Services

May 1963

 GATB #2434

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

TELLER (banking) 1-06.02

B-536

(Supersedes B-495)

Summary

The General Aptitude Test Battery, B-1002A, was administered to two samples of employed Tellers 1-06.02 for the purpose of validating and cross-validating occupational norms for this occupation. For each sample, the following listing shows the year in which data collection was completed, the number included in each final sample, and the type of criterion data obtained.

Sample	Year	N	Criterion
Validation (Arizona)	1962	50	Supervisory ratings
Cross-Validation (Michigan)	1961	50	Supervisory ratings

On the basis of the quantitative and qualitative analysis of the data, Aptitudes G-Intelligence, Q-Clerical Perception and F-Finger Dexterity were selected for inclusion in the final test norms.

GATB Norms for Teller 1-06.02, B-536

B-1001			B-1002		
Aptitude	Tests	Minimum Acceptable Aptitude Score	Aptitude	Tests	Minimum Acceptable Aptitude Score
G	CB-1-H CB-1-I CB-1-J	95	G	Part 3 Part 4 Part 6	90
Q	CB-1-B	105	Q	Part 1	105
F	CB-1-O CB-1-P	105	F	Part 11 Part 12	100

Effectiveness of Norms

The data in Table IV-A indicate that only 64 percent of the non-test-selected workers used for this study were good workers; if the workers had been test-selected with the above norms, 93 percent would have been good workers. 36 percent of the non-test-selected workers used for this study were poor workers; if the workers had been test-selected with the above norms, only 7 percent would have been poor workers.

TECHNICAL REPORT

I. Purpose

This study was conducted to determine the best combination of aptitudes and minimum scores to be used as norms on the General Aptitude Test Battery for the occupation of Teller 1-06.02.

II. Sample

Validation Sample (Arizona)

The General Aptitude Test Battery, B-1002A, was administered during October and December 1961 to 65 individuals employed as Tellers 1-06.02 at the Valley National Bank and the Arizona Bank in Phoenix, Arizona. One hundred Tellers were employed at these banks at the time test data were collected. Bank officials were requested to release as many Tellers for this study as was operationally feasible. The Tellers in the sample all volunteered to participate in this study. Of the 65 Tellers tested, 15 were not included in the final sample; one on the basis of education completed and 14 because they had not completed the six month on-the-job training period. The final sample is comprised of 50 individuals; 9 male and 41 female. All of these individuals are considered experienced.

The hiring procedures of the above banks include the following specifications: preferred are applicants between 25 and 35 years of age, who have completed high school and have bank or related experience; applicants must score satisfactorily on a tailor made bank personality test.

Cross-Validation Sample (Michigan)

The General Aptitude Test Battery, B-1002A, was administered during March 1961 to a sample of 60 female and 9 male Bank Tellers 1-06.02 who volunteered to participate in this study. The 69 workers were employed at three banks in Kalamazoo, Michigan. The names of these banks and the number of employees tested at each are listed below:

	No. Tested
American National Bank and Trust Company	27
Industrial State Bank	29
First National Bank and Trust Company	13
	69

Of the 69 Tellers tested, 19 were not included in the final sample; two because they had not completed the six month on-the-job training period, and 17 who were eliminated after the criterion was corrected for experience. The final sample consisted of 50 individuals; 43 female and 7 male. All of these individuals are considered experienced.

The above banks prefer to hire female high school graduates who are between 18 and 45 years of age. Experience is not required and no tests are administered to applicants.

TABLE I-A

Means (M), Standard Deviations (σ), Ranges, and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education, and Experience

Validation Sample (Arizona)

N = 50	M	σ	Range	r
Age (years)	31.3	8.5	19-50	-.040
Education (years)	12.6	0.9	12-15	-.274
Experience (months)	31.0	25.9	7-124	.337*

*Significant at the .05 level

TABLE I-B

Means (M), Standard Deviations (σ), Ranges, and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education, and Experience

Cross-Validation Sample (Michigan)

N = 50	M	σ	Range	r
Age (years)	31.8	9.7	20-51	-.277
Education (years)	12.3	1.2	8-15	-.284*
Experience (months)	55.3	32.0	12-144	.007

*Significant at the .05 level

III. Job Description

Job Title: Teller (banking) 1-06.02

Job Summary: Serves bank customers by performing the following duties: accepts cash and checks for deposit; pays out money by cash or check in accordance with withdrawal requests; cashes checks, government bonds and foreign drafts; accepts payments on loans and savings plans. Maintains records of transactions and performs related duties such as sorting and posting armored car deposits.

Work Performed: Obtains cash box from vault; counts and separates, by denomination, paper money and coins in cash box, and loads coin dispenser. Secures supply of forms generally used in transactions and positions them in convenient places in teller's cage.

Opens cage for business: Greets customer in friendly manner and ascertains, by observation and questioning, type of business to be transacted.

Handles deposits and withdrawal transactions: Verifies value of bills, coins and checks received against entries on deposit slip by counting money and operating adding machine to total entries. Posts amount received on deposit or amount of withdrawal in customer's passbook; stamps date, initials and operates posting machine to post simultaneously customer's deposit or withdrawal slip, teller's cash received or withdrawal slip and customer's deposit or withdrawal receipt.

Carefully counts amount of money withdrawn and gives it to customer. Places cash-received or cash-withdrawal slip in drawer and returns passbook. Binds copy of cash-received slip and deposit total to check and places in pick-up basket. Records transactions on daily balance sheet.

Cashes checks: Observes name of issuer and ascertains that check is properly signed and dated.

Verifies signature and endorsements against signature document. Determines balance in account, to insure balance will cover check. Contacts bank officer in doubtful cases.

Cashes government bonds: Verifies signature, computes interest from chart and adds to purchase price to determine current value.

Cashes foreign drafts: Verifies signature and follows accepted procedures for identifying payee.

Accepts loan payments: Verifies amount of payment and computes interest. Counts cash and verifies entries and signature on checks. Enters amount of payment and principal in customer's book or removes payment coupon from book.

Accepts deposits for savings plans such as Christmas Clubs: Receives cash or check and savings book from customer. Stamps book and detaches numbered receipt. (Numbered receipt serves as deposit slip.) Posts account card with date of deposit and returns receipt book to customer. Places cash or check-deposits and receipt in basket and posts tally sheet.

Issues cashier checks: Accepts cash or check and request for cashier check from customer. Inserts check form into check writer, sets levers and presses handle to impress amount onto check. Posts check number and amount onto check. Posts check number and amount onto check ledger book and clips receipt to check or cash and places in baskets or tray.

Closes out at end of banking day: Packages money received during day's activities by counting and wrapping with gummed tape prescribed number of each paper denomination. Counts coin and inserts into standard rolls. Counts and verifies working cash in cash drawer. Prepares report of working cash in drawer. Completes report of activities by balancing debits and credits on daily teller sheet.

Performs related duties such as sorting incoming checks, posting deposits by mail, and counting, verifying and posting armored car deposits.

IV. Experimental Battery

All the tests of the GATB, B-1002A, were administered to the two sample groups.

V. Criterion

Validation Sample (Arizona)

The criterion data collected consisted of supervisory ratings on a modified version of USES Form SP-21, "Descriptive Rating Scale." The rating scale consisted of nine items covering different aspects of job performance, with four alternatives for each item. Weights of one through four, indicating the degree of job proficiency attained, were assigned to the alternatives.

Separate ratings and reratings were made in November and December of 1961 by both the Assistant Managers and Operations Officers of the Valley National Bank, and in January and February 1962 by both the Assistant Managers and Operations Officers of the Arizona Bank. Reliability coefficients of .902 and .903 were obtained for the ratings made by the Assistant Managers and Operations Officers, respectively; the relationship between the combined Assistant Managers' ratings and combined Operations Officers' ratings was .723. Therefore, the four sets of ratings for the individuals in the sample were combined, resulting in a distribution of final criterion scores of 41-134, with a mean of 96.9 and a standard deviation of 20.2

Cross-Validation Sample (Michigan)

The criterion data collected consisted of two sets of independent ratings made by the first-line supervisor on USES Form SP-21, "Descriptive Rating Scale." A period of at least two weeks elapsed between the first and second ratings. The rating scale consisted of nine items covering different aspects of job performance, with five alternatives for each item. Weights of one through five, indicating the degree of job proficiency attained, were assigned to the alternatives. A reliability coefficient of .90 was obtained for the criterion. Therefore, the two sets of ratings were average and multiplied by ten to eliminate the decimal, resulting in a distribution of final criterion scores of 220-425, with a mean of 346.0 and a standard deviation of 51.3.

VI. Qualitative and Quantitative Analyses

A. Qualitative Analysis

On the basis of the job analysis data, the following aptitudes were rated "important" for success in this occupation:

Intelligence (G) - required in using judgment and in ability to learn the rules, practices, and procedures involved in various financial transactions.

Numerical Aptitude (N) - required in counting money, computing interest rates, credits, and debits, and in proving cash balances.

Clerical Perception (Q) - required in maintaining records, verifying signatures, and in identifying various denominations of bills, drafts, and checks.

Finger Dexterity (F) - required in handling monies, operating adding machines and in writing numbers clearly and accurately.

On the basis of the job analysis data, Spatial Aptitude (S) was rated "irrelevant" for success in this occupation.

B. Quantitative Analysis: Validation Sample-Arizona

TABLE II

Means (M), Standard Deviations (σ), and Pearson Product-Moment Correlations with the Criterion (r) for the Aptitudes of the GATB; N = 50

Aptitudes	M	σ	r
G-Intelligence	110.9	12.6	-.133
V-Verbal Aptitude	110.5	11.6	.265
N-Numerical Aptitude	110.3	14.0	-.084
S-Spatial Aptitude	107.1	19.3	-.102
P-Form Perception	114.6	15.5	.138
Q-Clerical Perception	120.4	13.3	.112
K-Motor Coordination	113.7	13.1	.093
F-Finger Dexterity	106.9	19.0	.445**
M-Manual Dexterity	100.8	16.9	.165

**Significant at the .01 level

C. Selection of Test Norms: Validation Sample-Arizona

TABLE III

Summary of Qualitative and Quantitative Data

Type of Evidence	Aptitudes								
	G	V	N	S	P	Q	K	F	M
Job Analysis Data									
Important	X		X			X		X	
Irrelevant				X					
Relatively High Mean					X	X	X		
Relatively Low Sigma	X	X				X	X		
Significant Correlation with Criterion								X	
Aptitudes to be Considered for Trial Norms	G					Q	K	F	

Trial norms consisting of various combinations of Aptitudes G, Q, K and F with appropriate cutting scores were evaluated against the criterion by means of the Phi Coefficient technique. A comparison of the results showed that B-1002 norms consisting of G-90, Q-105 and F-100 had the best selective efficiency.

VII. Validity of Norms (Concurrent)

The validity of the norms was determined by computing a Phi Coefficient between the test norms and the criterion and applying the Chi Square test. The criterion was dichotomized by placing 36 percent of the sample in the low criterion group because this percent was considered to be the unsatisfactory or marginal workers.

Table IV-A shows the relationship between test norms consisting of Aptitudes G, Q and F with critical scores of 90, 105 and 100, respectively, and the dichotomized criterion for Teller 1-06.02 for the validation sample. Workers in the high criterion group have been designated as "good workers" and those in the low criterion group as "poor workers."

TABLE IV-A

Validity of Test Norms for Teller 1-06.02
(G-90, Q-105, F-100)

Validation Sample
(Arizona)

N = 50	Non-Qualifying Test Scores	Qualifying Test Scores	Total
Good Workers	5	27	32
Poor Workers	16	2	18
Total	21	29	50

Phi Coefficient = .71
X^2 = 25.400
P/2 < .0005

The data in the above table indicate a significant relationship between the test norms and the criterion for the validation sample.

Table IV-B shows the relationship between test norms consisting of Aptitudes G, Q and F with critical scores of 90, 105 and 100, respectively, and the dichotomized criterion for Teller 1-06.02 for the cross-validation sample. Workers in the high criterion group have been designated as "good workers" and those in the low criterion group as "poor workers."

TABLE IV-B

Validity of Test Norms for Teller 1-06.02
(G-90, Q-105, F-100)

Cross-Validation Sample
(Michigan)

N = 50	Non-Qualifying Test Scores	Qualifying Test Scores	Total
Good Workers	11	22	33
Poor Workers	10	7	17
Total	21	29	50

Phi Coefficient = .25
X^2 = 3.000
P/2 < .05

The data in the above table indicate a significant relationship between the test norms and the criterion for the cross-validation sample.

VIII. Conclusions

On the basis of the results of this study, Aptitudes G, Q and F with minimum scores of 90, 105 and 100, respectively, have been established as B-1002 norms for Teller 1-06.02. The equivalent B-1001 norms consist of G-95, Q-105 and F-105.

IX. Determination of Occupational Aptitude Pattern

The data for this study did not meet the requirements for incorporating the occupation studied into any of the 35 OAP's included in Section II of the Guide to the Use of the General Aptitude Test Battery, January 1962. The data for this sample will be considered for future groupings of occupations in the development of new occupational aptitude patterns.